## **ABSTRACT**

The present invention provides a polynuclear  $\alpha$ -diimine Ni(II) complex used as the precursor of the catalyst in polymerizing polyolefine, represented by the following formula:

wherein M is Ni; X is Cl or Br; m and n is independently an integer from 0 to 100, respectively;  $R_1$  and  $R_2$  is the same or different, and is selected from the group consisting of H, methyl, ethyl, isopropyl and tert-butyl; Y is  $CR_3R_4$ , wherein  $R_3$  and  $R_4$  is the same or different, and is selected from the group consisting of H, methyl, ethyl, propyl, butyl and phenyl, or  $R_3$  and  $R_4$  forming a cyclic alkyl group;  $R_5$  and  $R_6$  is the same or different, and is selected from the group consisting of methyl, ethyl, propyl and heterocyclic group; Q is a cyclic divalent residual group of the following formula or a mixture thereof:

The compound of this invention can be used to catalyze the polymerization of ethylene and to prepare high molecular weight branched polyethylene.